



# **Beach Garden Project**

**Habitat Restoration by Students  
on the Monterey Bay Dunes  
2006-2007**



# Meaningful Watershed Educational Experiences for Students

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Monterey Dunes Natural History Association  
2004-2007

Chuck Haugen Conservation Fund  
2007-2008

# Beach Garden Project Goals

- Students perform hands-on restoration science at public parks in the Monterey Dunes.

Seed collection, propagation, outplanting, monitoring

- Students learn about the Monterey Dunes and the coastal watershed.

Slide show, Beach Garden Project website

Curriculum aligned with CA. State Standards (grades 1-5)

- Students learn stewardship by restoring native species to local parks.



## Monterey Dunes: A unique biological resource





High plant diversity provides food and shelter  
for many animal species



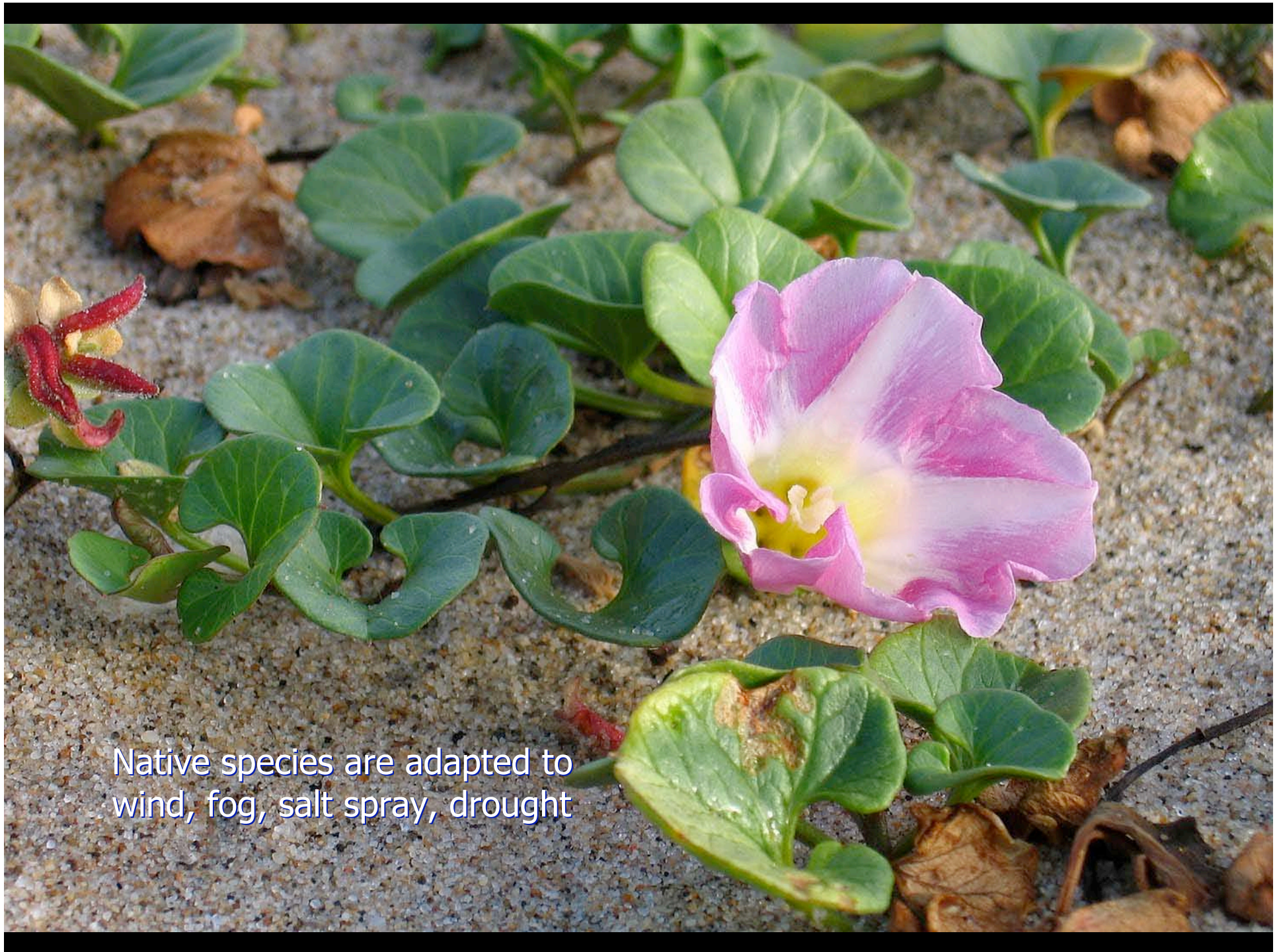


# Native Dune Plant Species

Stabilize the sand with extensive root systems







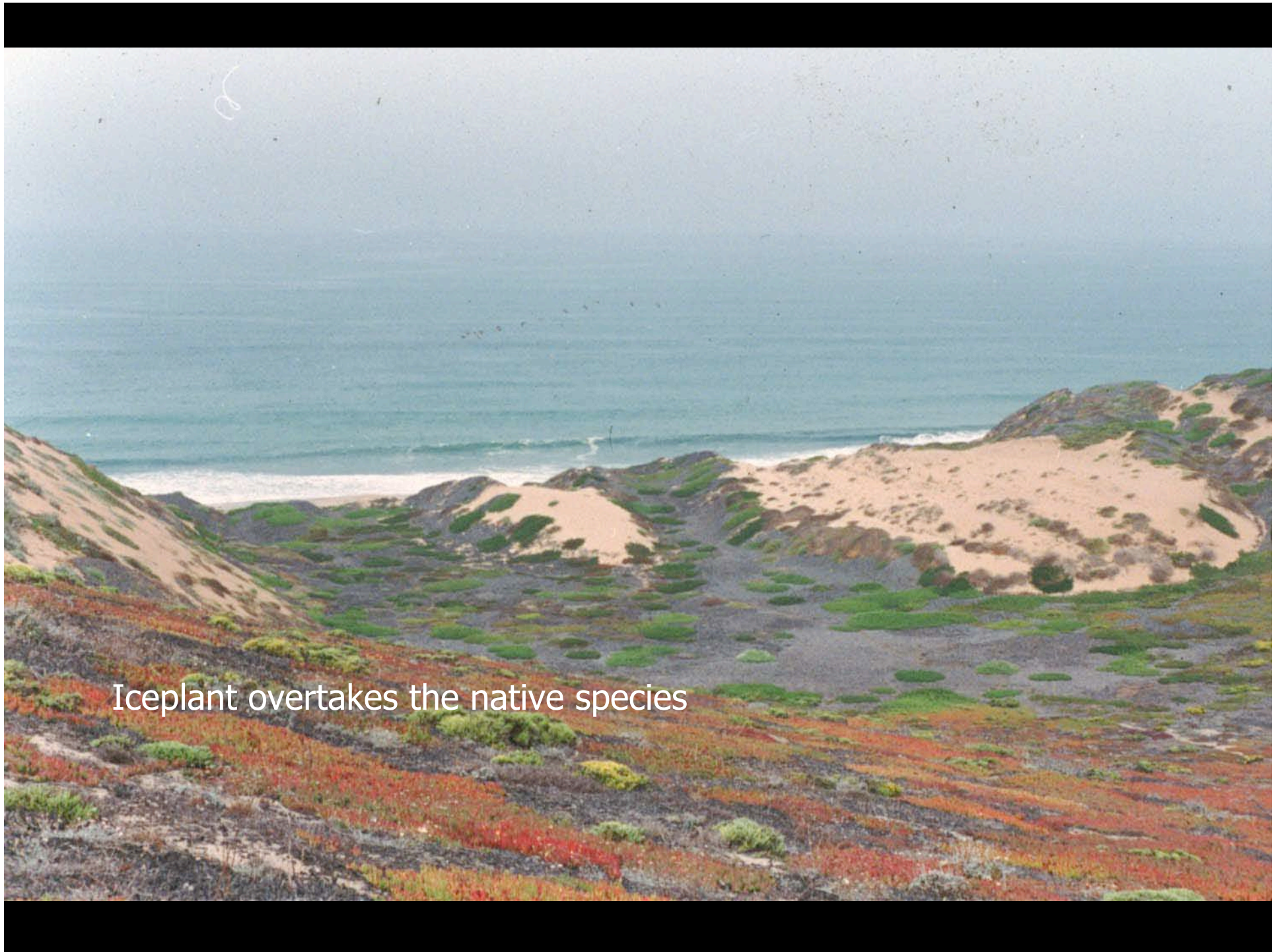


# Non-Native Species

Iceplant reduces native plant diversity and accelerates coastal erosion







Iceplant overtakes the native species



# Human threats to dune habitat

Development

Uncontrolled recreational use







# Beach Garden Project Partners

California Department of Parks and Recreation

Carmel River Beach

Monterey State Beach

Seaside Beach

Marina State Beach

Salinas River State Beach

Monterey Peninsula Regional Parks District

Aeolian Dunes, Sand City (Calabrese Site)

Marina Dunes Preserve

**Beach Garden Project Adult Volunteers**



# Audience

120 students (2 schools) > 60% low income

220 (3 schools) 39-59% Hispanic population

TOTAL 280 students

Grade 1 (20)

Grade 2 (20)

Grade 3 (60)

Grade 4 (60)

Grade 5 (120)





# Instructional Time

Total time 10-12 hours/class

## 3-4 class sessions (6-8 hours per class)

- Pre-test, slide show (dune formation, species, adaptations, threats)
- Propagation (200 seedlings per classroom)
- Watershed pollution lesson
- Final review/ brainstorm environmental actions/post-test

## 2 fieldtrips (4 hours per class)

- Seed collection (respect for habitat, collect, observe/ sketch plants)
- Outplanting of seedlings (observe/ sketch, plant, animal tracks)
- Monitoring (some classes, measure plant along transect tape)







Seed collection

























# Assessments

- Pre and post tests

(Grades 4-5, 100 students)

Knowledge - Multiple choice, true/false questions

Environmental attitudes/ behavior- survey by rating

Goal: Increase dune knowledge and environmental behaviors by 25%

- Tally planting skills during outplanting

(50 students, all ages)

Goal: Plant seedlings at 75% competency





## Assessment Methods/ Results

Tallied difference in pre/ post  
test scores by question.

Monterey Dunes knowledge  
increased by 20%

Environmental attitudes and  
behaviors improved by 7%

Planting by 50 students at  
80% competency



# Products

Worksheets/ lesson plans adapted to local sites  
scavenger hunts, animal tracks, coastal erosion

Website – [beachgardenproject.com](http://beachgardenproject.com)



# Results

- 1635 seedlings planted (from 2500 started)  
(students return 65%, adults return 75%)
- Commercial value:  
\$1 per seedling grown and \$1 per seedling planted  
= **\$3270 value** donated to State and Regional Parks
- Dune plants grow quickly, blooming landscape in 2-3 years
- Cost per student = \$120 (2 fieldtrips)
- Cost with matching funding = \$75 /student



## Seaside Beach 1994





Seaside Beach today









# Program Changes

- Review basic facts about plant structure, life cycles
- Vocabulary lists
- Added watershed pollution lessons
- Added fieldtrips: seed collection (fall), sand crabs (spring)

Ideal staff ratio 1:8

- Some student plants moved to greenhouses
- Assessments:

Pre/ post tests now 50% multiple choice, 50% open answer

Increased testing from 100 to 180 students





# Thank you

- Monterey Dunes Coalition
- Congressman Sam Farr
- Monterey Bay National Marine Sanctuary (NOAA)/ BWET Program